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ONTARIO WATER
RESOURCES COMMISSION

ANNUAL REPORT 1965

SIMCOE

***water pollution
control plant***

DIVISION OF PLANT OPERATIONS

Ontario Water Resources Commission



ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Simcoe Local Advisory Committee,
Town of Simcoe.

Gentlemen:

I am pleased to provide you with the 1965 Annual Report for the Simcoe Water Pollution Control Plant, OWRC Project No. 62-S-120.

We appreciate the co-operation you have extended to our Operations staff throughout the year, and trust that continuation of this close association will ensure even greater progress in the sphere of water pollution control.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly".

D. S. Caverly,
General Manager.



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to provide you with the 1965 Annual Report on the operation of the Simcoe Water Pollution Control Plant, OWRC Project No. 62-S-120.

The report presents design data, outlines operating problems encountered during the year and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

This report provides useful information on the operating efficiency of this project during 1965. It is intended to act as a guide in gauging plant performance. To implement that aim, it includes detailed statistical and cost data, a description of the project and a summary of its operation during the year.

Of particular interest will be the cost data, which show the total cost to the municipality and the areas of major expenditure.

The Regional Operations Engineer is primarily responsible for the preparation of the report, and has compiled and arranged the material. He will be pleased to answer any questions regarding it. Other groups, however, were involved in the production, and these include the statistics section, the Drafting Section of the Division of Sanitary Engineering and the Division of Finance.

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

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SIMCOE

water pollution control plant

operated for

THE TOWN OF SIMCOE

by the

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN: Dr. James A. Vance

VICE-CHAIRMAN: J. H. H. Root, M.P.P.

COMMISSIONERS

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D. A. Moodie	L. E. Venchiarutti

GENERAL MANAGER: D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers	K. H. Sharpe
F. A. Voegel	A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director:	C. W. Perry
Regional Supervisor:	A. C. Beattie
Operations Engineer:	P. J. Osmond

801 Bay Street Toronto 5

'65 REVIEW

A total of 565.53 million gallons of raw sewage was treated during 1965 . This represents a 16.5% increase over 1964. The total design capacity of the two plants was exceeded 10% of the time in 1965 whereas it was never exceeded on a daily basis in 1964.

Once again the organic loading on the plants was somewhat higher than design loadings however, these have been adequately handled to date. On the average of the year's results the effluent quality met OWRC objectives of 15 ppm BOD and SS.

The plant staff assisted by OWRC head office technicians once again managed to keep ahead of mechanical and electrical maintenance problems during the year. However, the problem of maintaining the new equipment associated with the No. 2 plant compounded by the renovation of the No. 1 plant have created many maintenance and operating problems during the year. One major item accomplished during 1965 and worthy of special note was the installation of a new potable water distribution system throughout the plant.

GLOSSARY

BOD	biochemical oxygen demand (a measure of organic content)
cfm	cubic feet per minute
comminution	shredding of solids into small fragments
DWF	dry weather flow
effluent	outflow
flocculation	bringing very small particles together to form a larger mass (the floc) before settling
fps	feet per second
gpcd	gallons per capita per day
gpm	gallons per minute
grit	sand, dust, stones, cinders and other heavy inorganic material
influent	inflow
lin. ft.	lineal feet
mgd	million gallons per day
mlss	mixed liquor suspended solids
ppm	parts per million
ss	suspended solids
TDH	total dynamic head (usually refers to pressure on a pump when it is in operation)

HISTORY

1959 - 1965

INCEPTION

In 1959, the Town of Simcoe asked the Ontario Water Resources Commission to make a survey of the Town's water pollution control facilities. In January, 1962, the Town acting on the recommendations of its consultants, Proctor and Redfern, Toronto, decided to proceed with enlargements of sewage treatment and collection facilities, and requested that the enlarged facilities be undertaken as a Commission project.

APPROVAL

Tentative Ontario Municipal Board approval was granted for the complete project on June 25, 1962. Final O.M.B. approval for contract No. 1 (enlarged treatment facilities) was granted on September 18, 1962. Final approval for contract No. 2 (enlarged collection facilities) was received on November 23, 1962.

CONSTRUCTION

Work on Contract No. 1, by the Frid Construction Company Limited, Hamilton, Ontario, began in October, 1962, and was completed in August, 1963. The Division of Plant Operations assumed responsibility for the project, including the facilities existing prior to construction.

Johnson Brothers Construction, Brantford, Ontario, commenced work on Contract No. 2 in March, 1963, and completed the job in September, 1963.

TOTAL COST

\$693,521.43



E. PERCIVAL
CHIEF OPERATOR

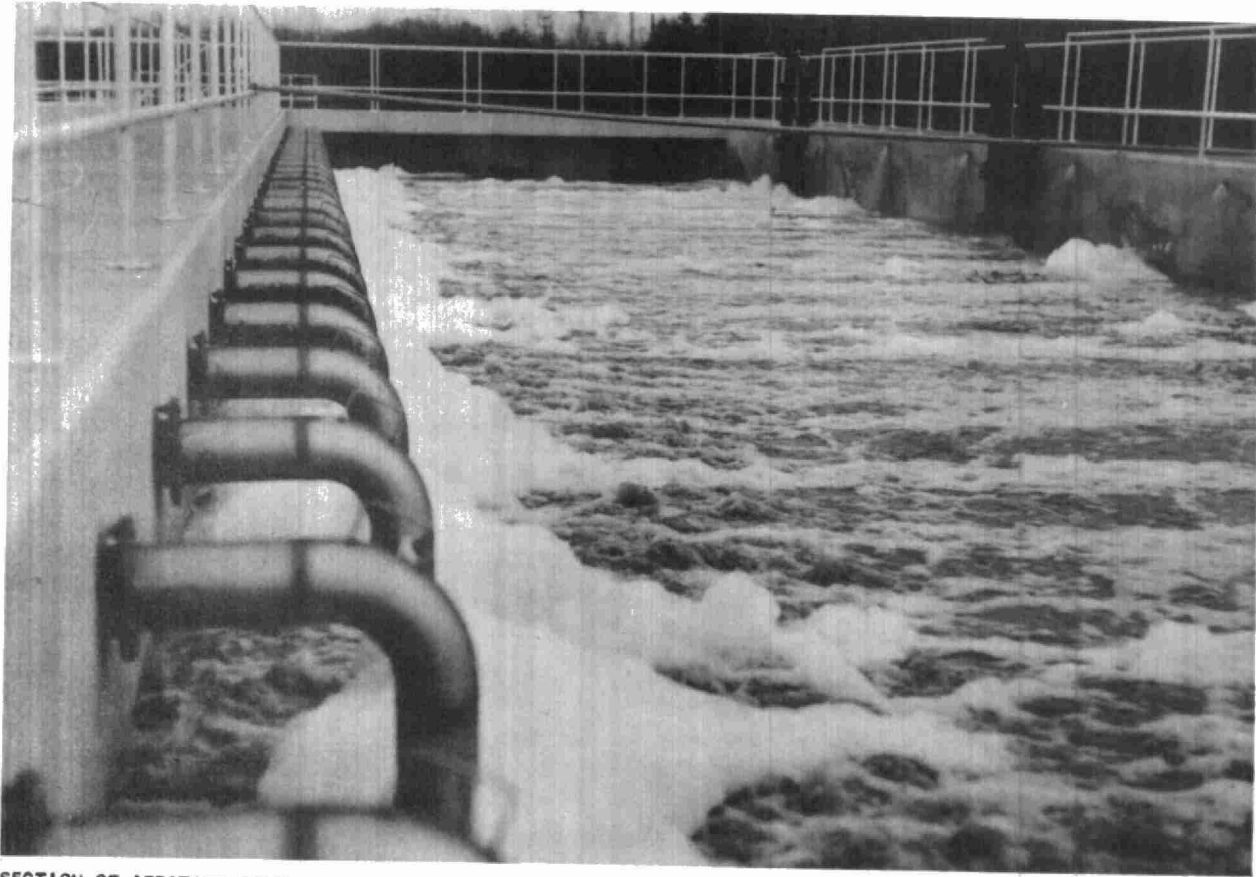
Project Staff

Operators: J. Juliff
W. Montrose
W. Sipes

COMMENTS

The permanent staff complement at this plant was increased from three to four with the addition of W. Sipes. Casual labour is provided for assistance during peak work load periods. These periods normally occur during the summer months when the grounds maintenance work load is the heaviest. The staff provide eight hour supervision of the plants five days per week with partial coverage on weekends.

During the past year, W. Montrose successfully completed the intermediate sewage works operators' course and E. Percival attended a maintenance gas fitters' course receiving certification qualifying him to maintain the plant boiler and appurtenances.



SECTION OF AERATION TANK

Description of Project

GENERAL

This project is composed essentially of two separate activated sludge treatment plants which share common raw sewage pumping, influent works, raw sludge pumping, digestion and chlorination facilities. One plant, of 0.6 mgd capacity, was put into operation in 1956; and the second plant, of 1.4 mgd capacity, was placed in operation in August 1963.

INFLUENT WORKS

Flow from the Town enters the raw sewage pumping station through a 36 inch diameter influent sewer. The sewage is lifted by one of four raw sewage pumps to the elevated influent works where it

is measured in a Parshall flume. The grit is settled out in the detritor and large objects in the sewage are macerated by a barminutor. The flow at this point is then split, the larger portion being directed to the new facilities (plant No. 2) and the smaller amount to the old plant, (plant No. 1). The influent works is also equipped with a bypass chamber. The bypass facility for the complete plant is located at a manhole upstream from the sewage pumping station.

PRIMARY SEDIMENTATION

From the influent works, sewage flows to three primary tanks where approximately 50% of the suspended solids in the sewage is settled out.

Bottom scrapers direct the settled solids, (sludge) to a sump from which they are pumped to the primary digester. Surface skimmers remove floating scum and grease and deposit this material in scum pits, (from which it is pumped to the primary digester. The effluent from these tanks then flows to the aeration sections.

AERATION

The partially settled sewage from the primary tanks flows into single pass aeration tanks where it is mixed with activated sludge being returned from the final tanks. The mixture is retained and aerated for approximately seven hours and then flows to the final tanks. Air for the tanks in the case of plant No. 1 is supplied by two rotary displacement blowers, while air for plant No. 2 employs the 'Inka' system of aeration and was the first plant financed by the OWRC to do so.

FINAL SEDIMENTATION

The mixed liquor, (effluent from the aeration tanks) is detained in the three final tanks where the remaining suspended solids settle to the bottom, are scraped to a sump, and pumped back to the inlet end of the aeration tanks. This returned sludge is split at this point, a certain percentage returning to the aeration tanks and some being wasted to the primary tanks.

CHLORINATION

Effluent from the final tanks flows to the chlorine contact chamber where it is chlorinated for disinfection purposes, detained for approximately 15 minutes then released via a 24 inch outfall sewer to the Lynn River.

DIGESTION

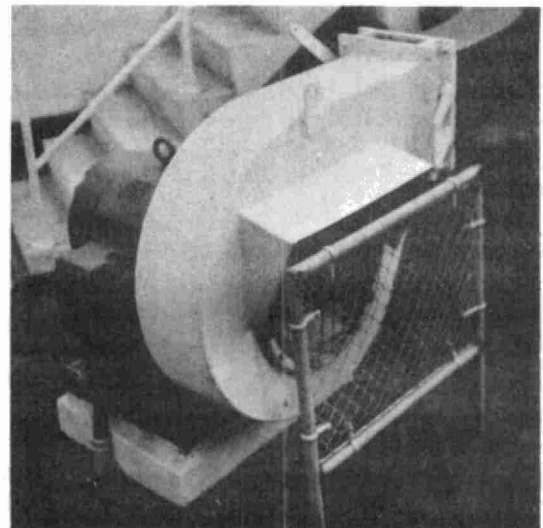
Sludge digestion in this plant is performed in two stages called primary and secondary digestion.

The sludge from the primary tanks is pumped, with excess activated sludge, to the primary digester. In the absence of air, and in a regulated temperature of 90 degrees Fahrenheit, the decomposing or digestion process begins. Constant agitation within the tank ensures overall treatment.

The raw sludge is broken down by anaerobic bacterial action and, when thoroughly digested, is a thick, black odourless liquid.

The secondary digester receives the digested material from the primary and completes the process. The secondary digester is not agitated, but is allowed to be quiescent. The supernatant is decanted and returned to the treatment process.

Sludge gas (principally methane), formed during the process, is used as a fuel for the heat exchangers and boiler, supplying heat to the digesters and buildings. The standby fuel is oil.



AIR FAN

PROJECT COSTS

NET CAPITAL COST (Final)		\$693,521.43
DEDUCT - Portion Financed by CMHC (Final)	\$409,699.75	
- Payments from Municipality	<u>37,795.29</u>	<u>\$447,495.04</u>
Long Term Debt to OWRC		<u>\$246,026.39</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1965		<u>\$ 13,778.53</u>
Net Operating		\$ 40,334.44
Debt Retirement		4,955.00
Reserve		5,104.52
Interest Charges		13,922.38
		<u> </u>
TOTAL		<u>\$ 64,316.34</u>

RESERVE ACCOUNT

Balance at January 1, 1965	\$ 7,795.48
Deposited by Municipality	5,104.52
Interest Earned	541.31
	<u> </u>
Less Expenditures	-
	<u> </u>
Balance at December 31, 1965	<u>\$ 13,441.31</u>

MONTHLY OPERATING COSTS

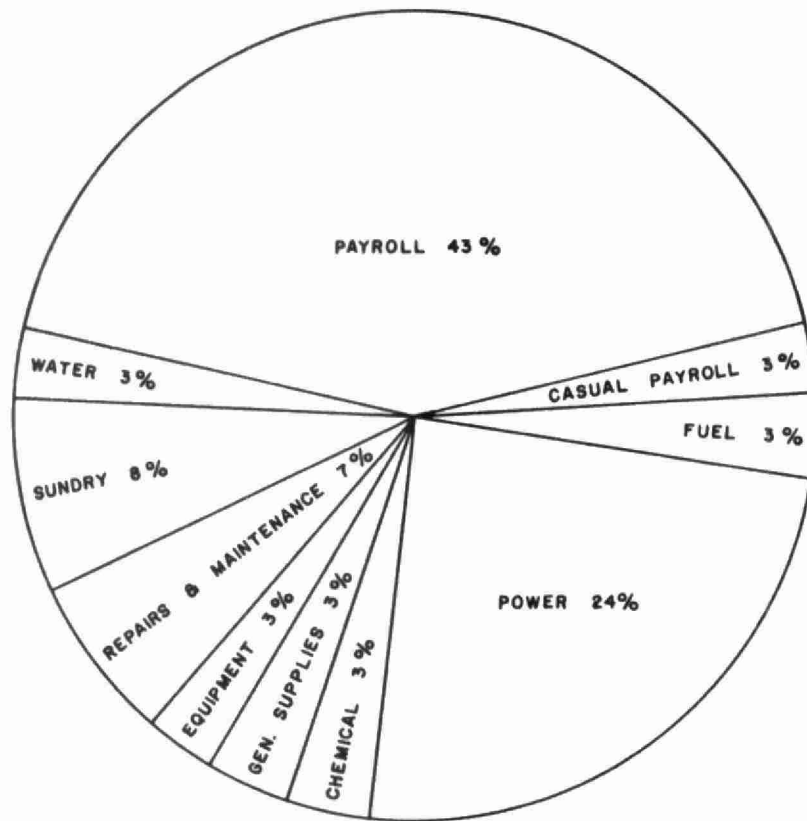
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	BUNDRY	WATER
JAN	4040.98	1064.94	231.00	123.18	774.12		68.21		102.96	1651.74	24.93
FEB	2019.47	632.28	243.12		752.04		140.75		176.98	46.05	28.25
MARCH	2592.68	1018.06	256.88	167.40	835.48	5.56	16.14	49.74	191.62	24.54	27.26
APRIL	1984.56	1542.87		318.03			97.57	5.40	7.55	13.14	
MAY	4798.86	2002.95		344.98	1589.61	359.96	70.52		221.10	88.53	121.21
JUNE	2903.93	1365.44		13.05	837.60		203.15	201.15	178.88	15.03	89.63
JULY	3664.09	1430.79	108.00		809.06	346.08	281.33	85.71	363.36	114.13	125.63
AUG	4205.93	1409.70	288.00	143.82	810.86	268.83	77.50	139.16	12.85	911.85	143.36
SEPT	3147.74	1440.83	15.84		835.09	268.83	110.78	84.57	142.50	65.53	183.77
OCT	4090.35	2192.07		85.91	958.05	91.13	92.52	33.44	434.13	52.54	150.56
NOV	2775.82	1559.18			728.87		97.66	70.14	181.61	66.82	71.54
DEC	4110.03	1627.20		177.41	860.26	13.98	120.92	420.08	674.08	177.32	38.78
TOTAL	40334.44	17286.31	1142.84	1373.78	9791.04	1354.37	1377.05	1089.39	2687.62	3227.22	1004.82

YEARLY OPERATING COSTS

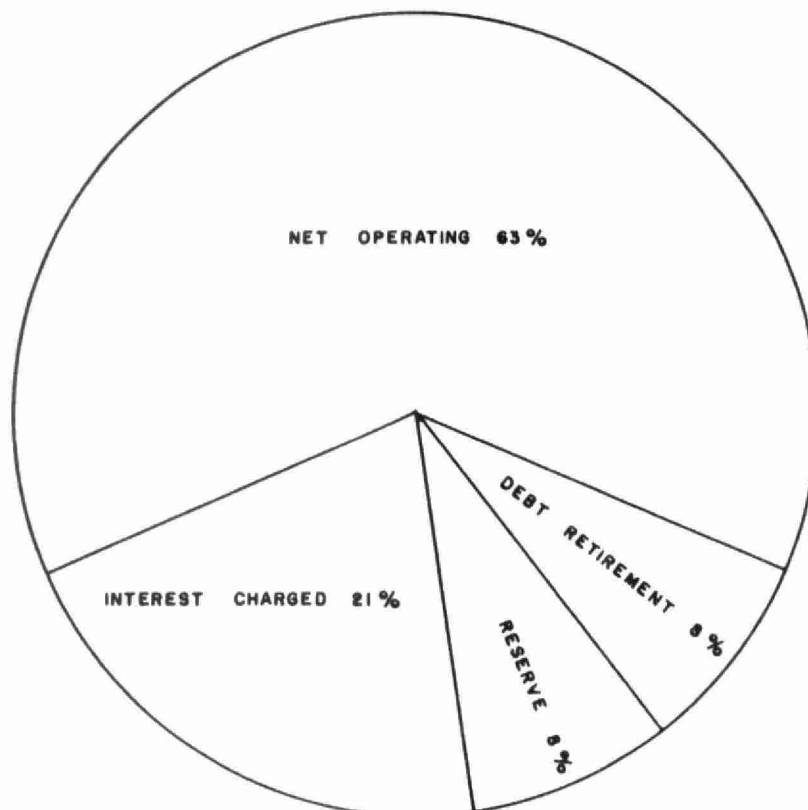
YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1964	485.269	\$ 33517.36	* \$13.26	\$ 69.06	2 CENTS
1965	565.531	40334.44	15.95	71.32	2 CENTS

* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

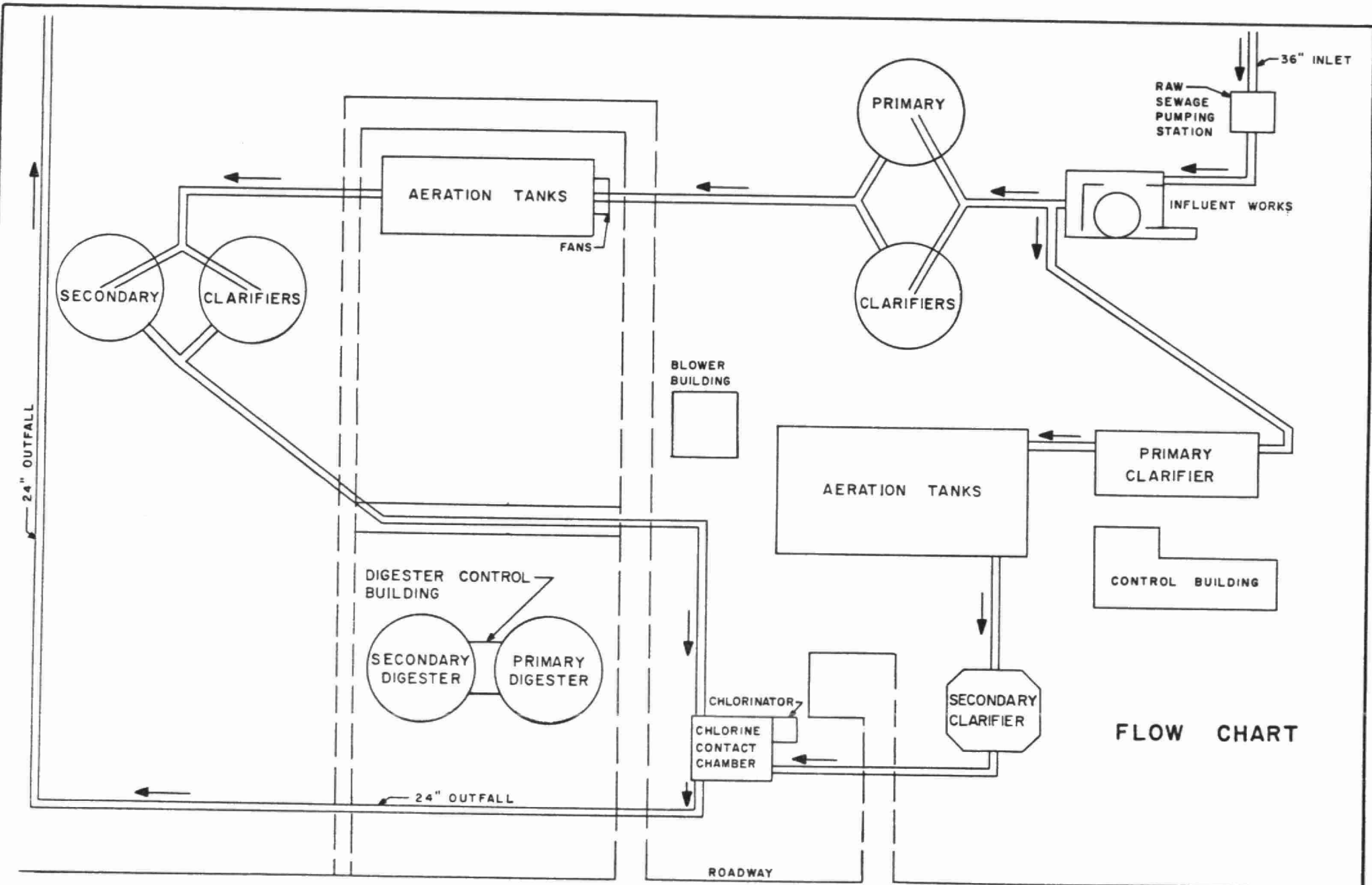
1965 OPERATING COSTS



TOTAL ANNUAL COST



**Technical
Section**



FLOW CHART

Design-Data

RAW SEWAGE PUMPS

No. 1 - Fairbanks Morse - 1200 gpm capacity @ 35' TDH powered by a 15 hp Fairbanks motor.

No. 2 - Smart-Turner - 500 gpm capacity @ 35' TDH powered by a 10 hp Reliance motor.

No. 3 - Worthington - 2000 gpm capacity @ 50' TDH powered by a 40 hp. Associated Electrical motor.

No. 4 - Worthington- 2000 gpm capacity @ 50' TDH powered by a 40 hp. Associated Electrical motor.

INFLUENT WORKS

Grit Removal

Dorr-Oliver-Long 'Detritor' with dimensions 14' x 14' x 1.5'. The volume of 1850 gallons provides a 1.33 minute detention at total design flow of 2.0 mgd.

Comminution

Chicago Pump Company Limited bar-minutor Model C, width 24".

TREATMENT PLANT NUMBER TWO (1.4 MGD Extension)

Type of Plant - Activated sludge.

Design Population - 10,800 persons.

Per Capita Flow - 130 gallons per day.

Design Plant Flow - 1.4 mgd.

Five Day BOD

Raw Sewage - 220 ppm

Removal - 90%

Suspended Solids

Raw Sewage - 230 ppm

Removal - 90%

PRIMARY SETTLING TANKS

Two Dorr-Oliver-Long primary clarifiers with dimensions 45' in diameter x 10' SWD. The combined volume of 198,000 gallons provides a 3.4 hour detention at design flow of 1.4 mgd.

Raw sludge pumps (serve plant #1 as well)

No. 1 - Marlow 87 gpm capacity @ 50' TDH powered by a 3 hp motor.

No. 2 - Marlow 87 gpm capacity @ 50' TDH powered by a 3 hp motor.

No. 3 - Marlow 87 gpm capacity @ 50' TDH powered by a 3 hp General Electric motor.

AERATION TANKS

Two single pass rectangular tanks measuring 92' x 25' x 12.5'. The combined volume of 382,000 gallons provides 6.65 hour detention at design flow.

AIR SUPPLY

Low pressure air for the 'Inka' diffuser system is supplied through a large concrete conduit by two James Howden Company fans. Each fan is capable of supplying 5508 cfm at a static pressure of 35" W.C. and is powered by a 50 hp. General Electric motor.

SECONDARY SETTLING TANKS

Two Dorr-Oliver-Long secondary clarifiers with dimensions 45' in diameter x 10' SWD. The combined volume of 198,000 gallons provides a 3.4 hour detention at design flow.

RETURN SLUDGE PUMPS

No. 1 - Weinman - 410 gpm capacity @ 23' TDH powered by a 5 hp US motor with vari-drive.

No. 2 - Weinman - 410 gpm capacity @ 23' TDH powered by a 5 hp US motor with vari-drive.

CHLORINATION

One rectangular tank measuring 20' x 15' x 16.5'. The volume of 12,650 gallons provides a thirteen minute detention time at design flow.

TREATMENT PLANT NUMBER ONE

(0.6 MGD original)

Type of Plant - Activated sludge.

Design Population - 4600 persons.

Per Capita Flow - 130 gallons per day.

Design Plant Flow - 600,000 gallons per day.

Five Day BOD

Raw Sewage - 220 ppm

Removal - 90%

Suspended Solids

Raw Sewage - 230 ppm

Removal - 90%

PRIMARY SETTLING TANKS

One rectangular tank measuring 50' x 20' x 8'. The volume of 50,000 gallons provides a detention time of 4.31 hours at the design flow of 0.6 mgd. Sludge and scum are removed by a 20' travelling Hardinge mechanism.

RAW SLUDGE HANDLING

These facilities are incorporate in plant number two.

AERATION TANKS

Eight rectangular tanks measuring 12 x 50' x 8'. The combined volume of 240,000 gallons provides a detention time of 7.68 hours at design flow with 25% return sludge.

AIR SUPPLY

Two Roots-Connorsville RCR Blowers, each having a capacity of 1200 cfm @ 6.5 psig. Each is driven by a 50 hp. Reliance motor.

SECONDARY SETTLING TANK

One hexagonal tank, approximately 46' in diameter and 9.5' SWD. The volume of 98,600 gallons provides a detention of 3.16 hours at design flow with 25% return sludge.

RETURN SLUDGE PUMPS

- No. 1 - Fairbanks Morse - 160 gpm capacity @ 56' TDH powered by a 5 hp Fairbanks motor.
- No. 2 - Fairbanks Morse - 160 gpm capacity @ 56' TDH powered by a 5 hp Fairbanks motor.
- No. 3 - Sludge Unloading Pump-Marlow, 80 gpm capacity @ 125' TDH, powered by a 5 hp motor.

CHLORINATION

One rectangular tank measuring 18' x 14.25' x 6'. The volume of 6800 gallons provides a detention time of 16.4 minute at design flow.

DIGESTION

Digesters

One 50' diameter x 20' SWD primary digester equipped with a Pacific Flush tank floating cover and a 110 cfm Pearth gas recirculation unit.

One 50' diameter x 20' SWD secondary digester equipped with a Pacific Flush tank spiral guided Gas Holding Roof, and a 4" bore supernatant draw-off pipe.

The total digester volume of 86,500 cu. ft. gives a per capita allowance of 5.6 cu. ft. and a loading of 1.43 lbs. solids per cu. ft. per month.

Heat Exchanger and Boiler

One Pacific Flush Tank Company spiral heat exchanger with a transfer area of 52 sq. ft. Heat is supplied by a dual-fueled Ray Boiler.

PUMPS

- No. 1 - Sludge Recirculating Pump-Fairbanks-Morse 150 gpm capacity @ 40' TDH, powered by a 5 hp Westinghouse motor.
- No. 2 - Sludge Transfer Pump - Marlow, 80 gpm capacity @ 125' TDH, powered by a 5 hp motor.

CHLORINATOR

One Wallace and Tiernan Series A-421, Visible Vacuum Chlorinator with a capacity of 400 lbs. per day.

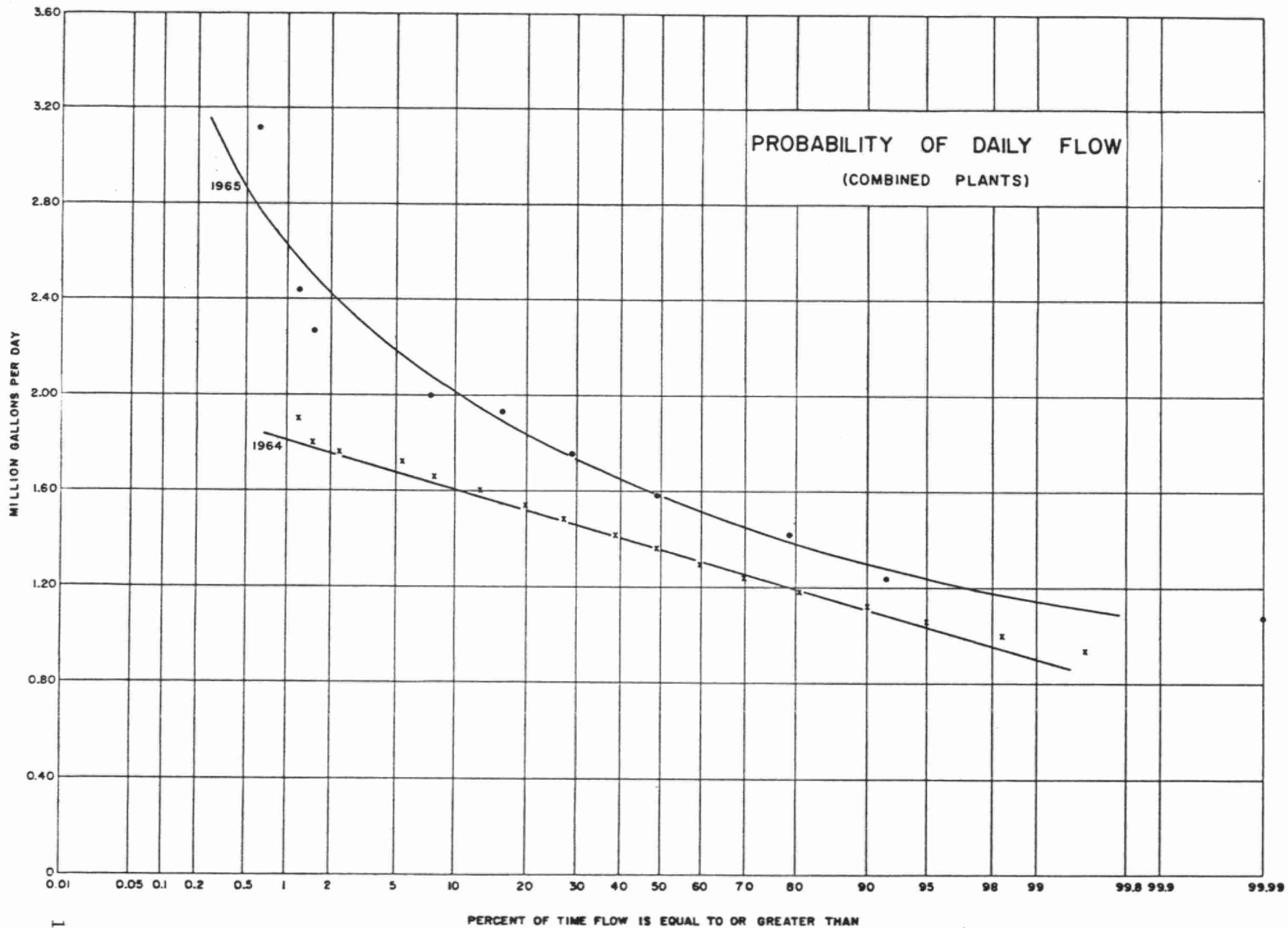
FLOW MEASUREMENT

Flow is measured by a BIF flow meter, which records, indicates and integrates the flow passing through a 12" Parshall flume located at the influent works,

Process Data

A total of 565.531 million gallons of raw sewage was treated at the Simcoe plant during 1965. This represents a 16.5% increase over the previous year. The average daily flow for the year was 1.55 million gallons which is a load factor on the combined plants of 78%. The maximum daily flow for any one day during the year was 5.701 million gallons and this occurred on March 6. The minimum daily flow for the year was 1.016 million gallons.

On a yearly average, the old plant which henceforth in this report will be called plant No. 1 accepted 35.9% of the total flow. The new plant which will be referred to as plant No. 2 accepted the balance. During the past year the total design capacity of the two plants was exceeded 10% of the time. This is notable considering the fact that the total design capacity of the plant was never exceeded in 1964.



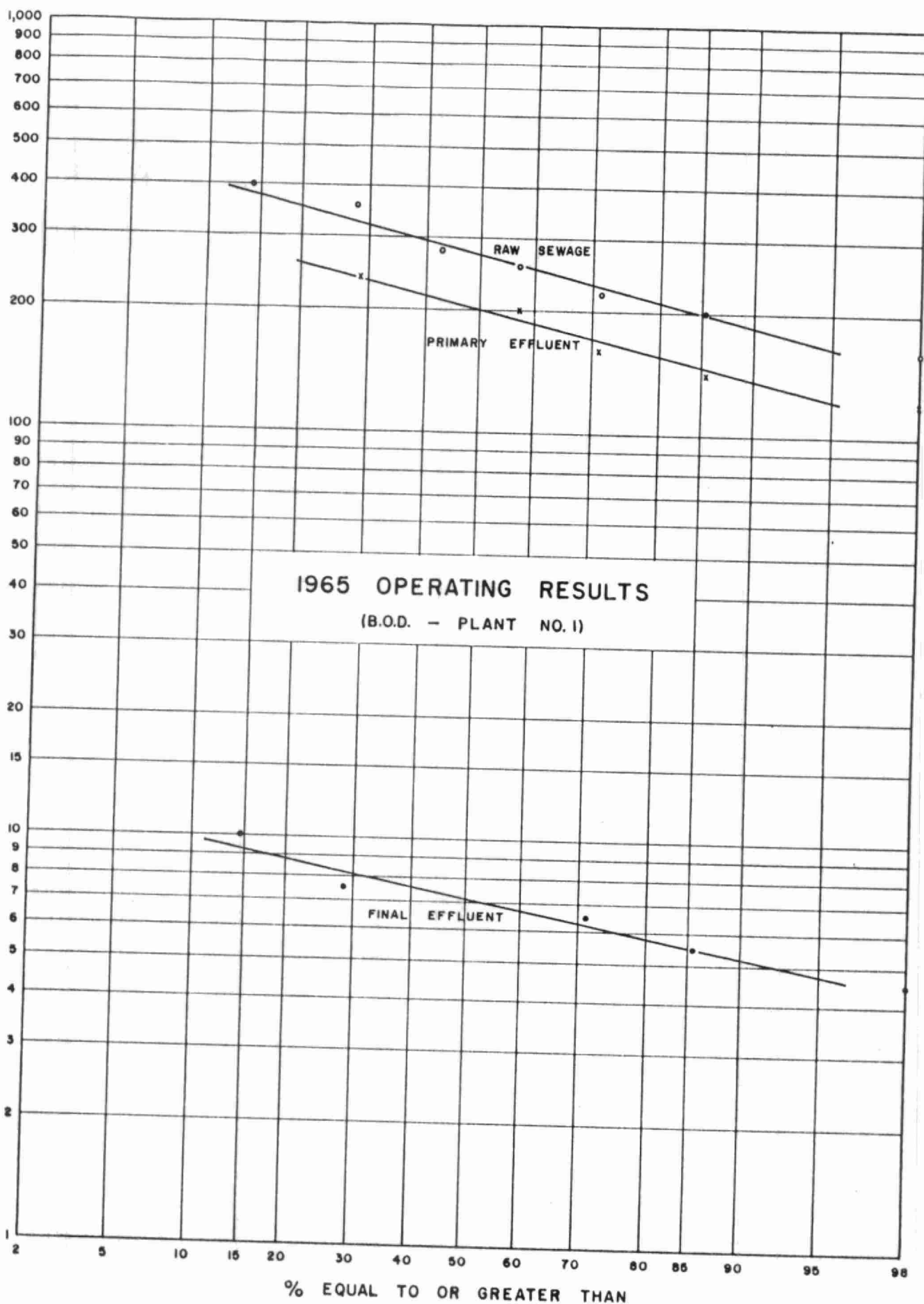
FLOW DATA

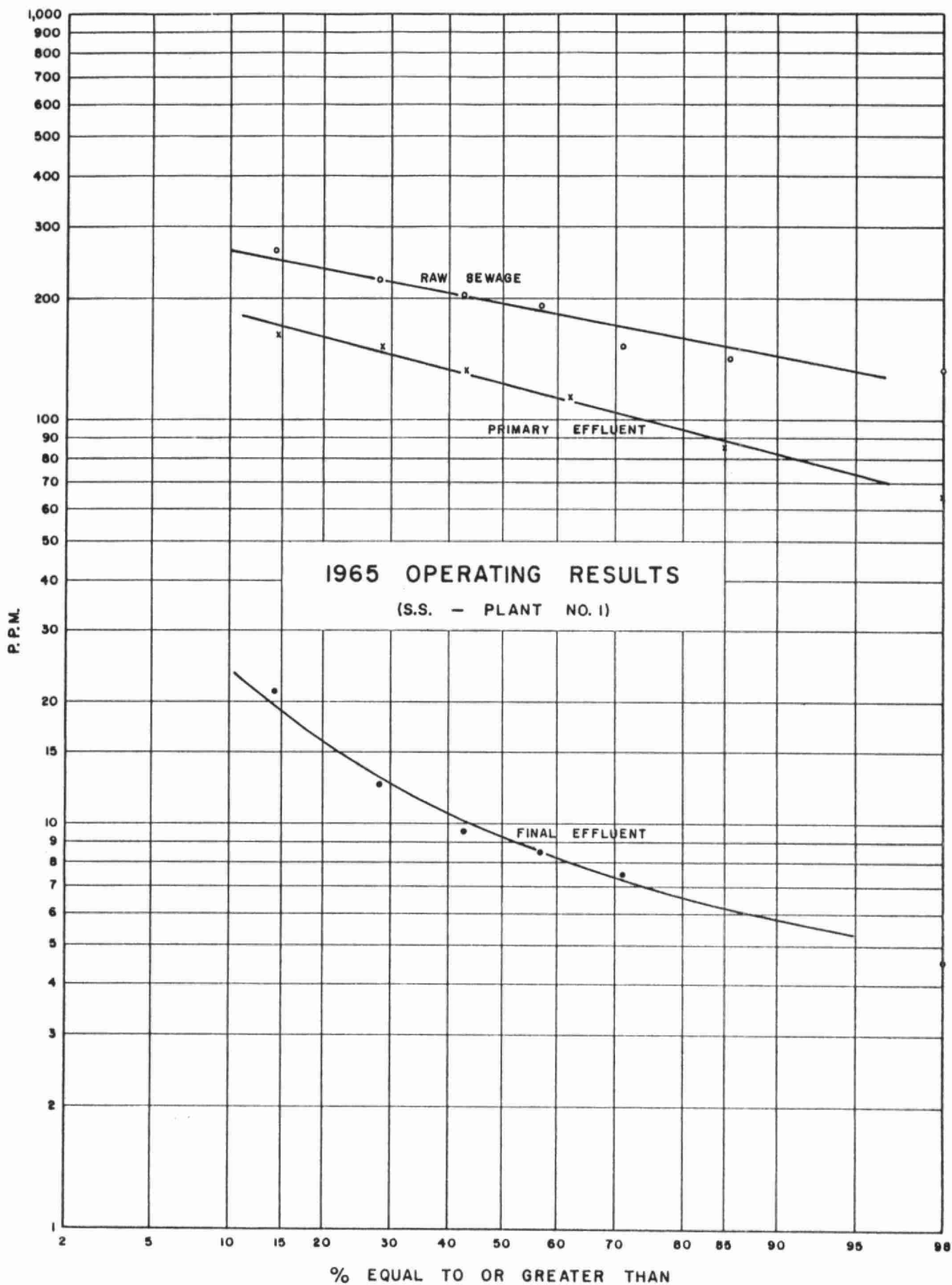
Month	Total flow M. G.	Max. Day for month M. G.	Avg. Daily for month M. G.	Total Monthly flow to Plant #1 M. G.	Total Monthly flow to Plant #2 M. G.
January	38.873	1.598	1.254	8.337	30.536
February	38.491	2.375	1.375	7.990	30.501
March	54.586	5.701	1.761	15.763	38.823
April	55.336	2.380	1.845	22.802	32.534
May	50.829	1.942	1.640	18.975	31.854
June	44.008	1.596	1.467	16.680	27.328
July	43.719	1.745	1.410	18.741	24.978
August	43.149	1.552	1.392	14.741	28.408
September	*45.912	-	-	16.092	*29.820
October	46.729	2.547	1.507	16.207	30.522
November	50.268	2.145	1.676	22.479	27.789
December	53.631	2.059	1.730	24.050	29.581
Total	565.531	-	-	202.857	362.674

*September Plant #2 prorated on 335 days of data due to flow meter breakdown

Year	Total flow M. G.	Maximum Daily M. G.	Minimum Daily M. G.	Average Daily M. G.
1964	485.269	1.924	.858	1.326
1965	565.531	5.701	1.016	1.549

P.P.M.





GRIT, B.O.D AND S.S. REMOVAL

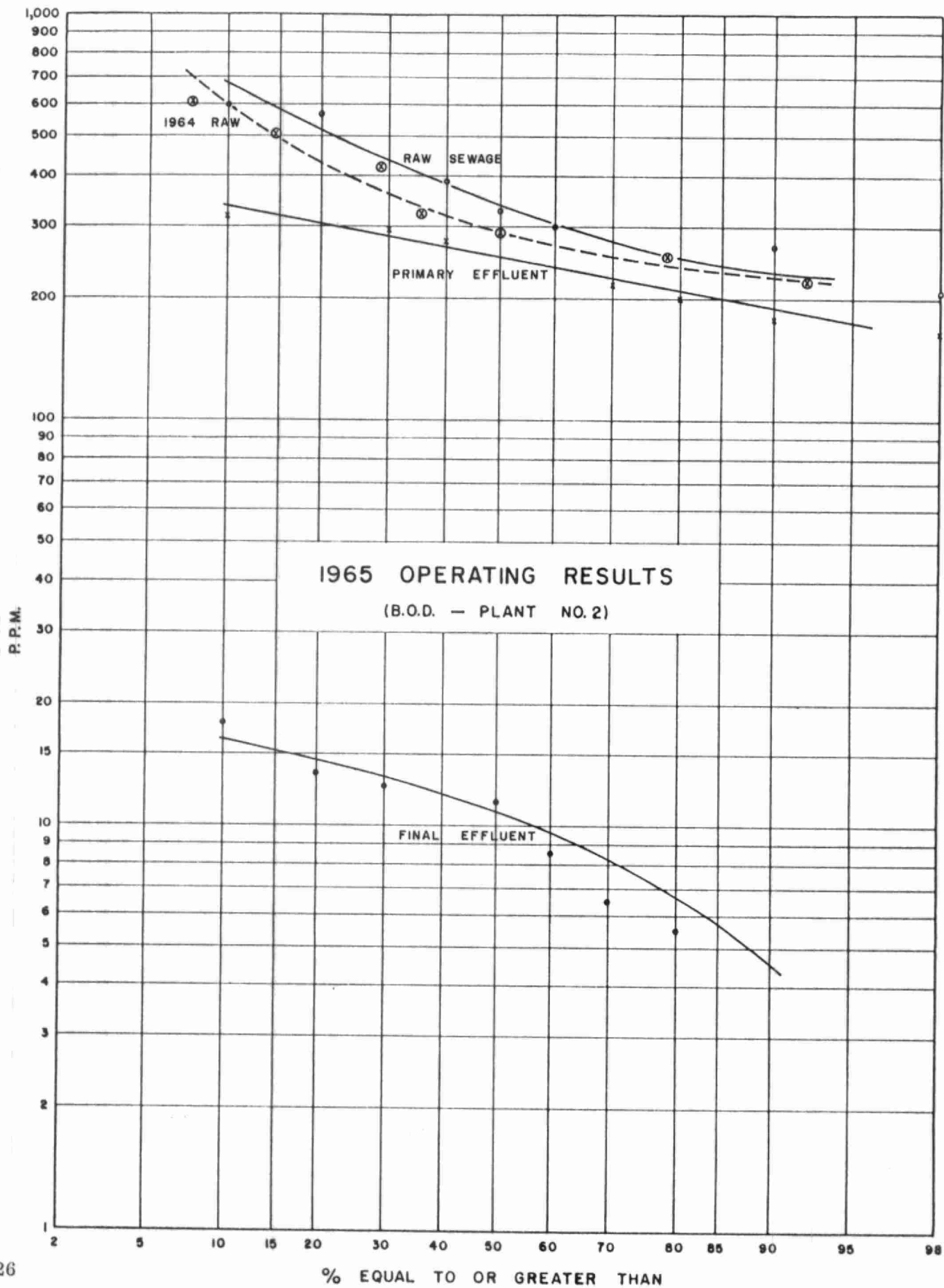
PLANT NO. 1

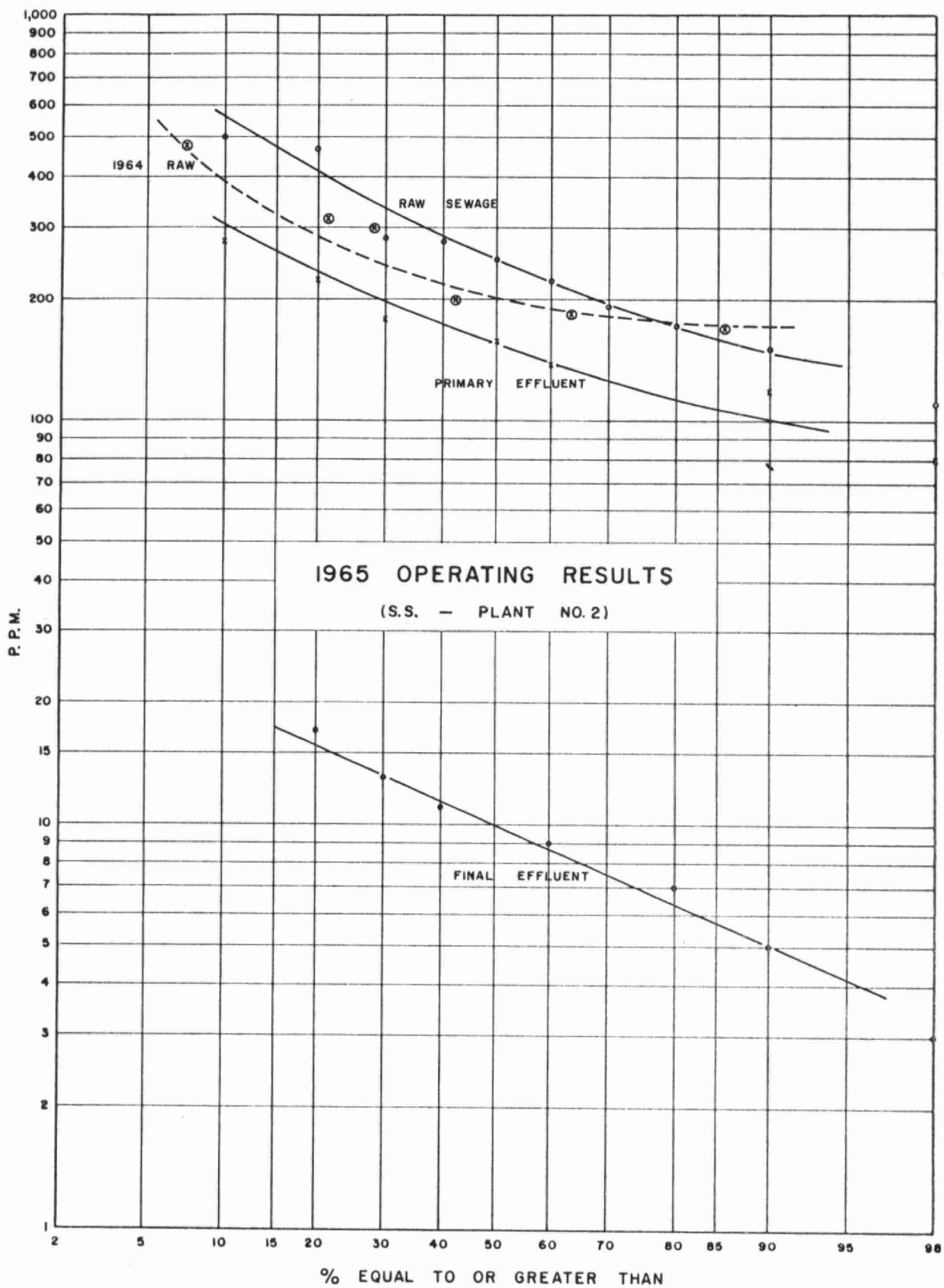
MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	170	6.8	96.0	6.8	152	6	96.0	6.1	
FEB.	400	8	98.0	15.7	206	5	97.5	8.0	
MAR.	*272	7	97.5	20.1	*190	10	94.5	14.2	
APR.	200	5.4	97.5	22.2	134	12	91.0	13.9	
MAY	265	4.4	98.5	24.7	200	5	97.5	18.5	
JUNE	220	6.6	97.0	17.8	144	8	94.5	11.3	
JULY	*272	7	97.5	24.8	*190	10	94.5	16.9	
AUG.	*272	7	97.5	19.5	*190	10	94.5	13.3	
SEPT.	*272	7	97.5	21.3	*190	10	94.5	14.5	
OCT.	*272	7	97.5	21.5	*190	10	94.5	14.6	
NOV.	280	11	96.0	30.2	228	21	90.5	23.3	
DEC.	370	6.4	98.5	43.7	266	10	96.0	30.8	
TOTAL	-	-	-	268.8	-	-	-	182.6	
AVG.	272	7	97.5	22.4	190	10	94.5	15.2	

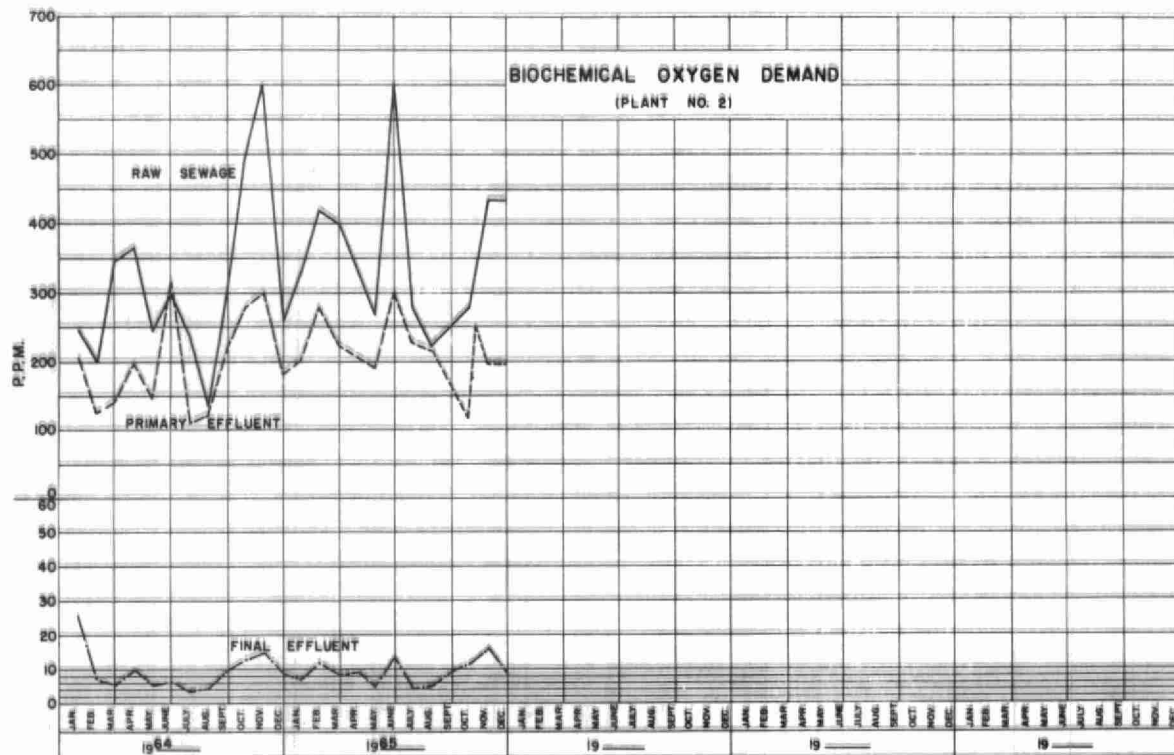
* Average values substituted. No sample.

COMMENTS

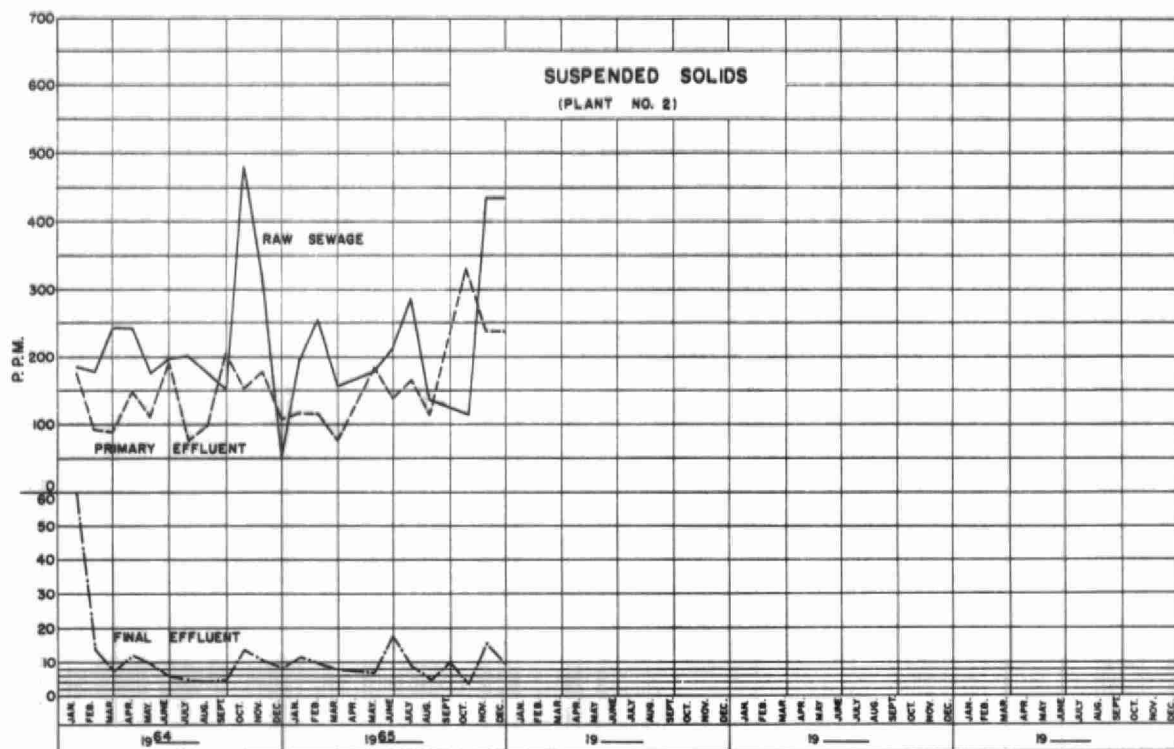
An average organic loading of 315 ppm BOD and 208 ppm suspended solids was received at the plant in 1965. The average effluent values of 7 ppm BOD and 10 ppm SS were within OWRC objectives of 15 ppm. The organic loadings for this plant were 43% greater than design values for BOD and 10% lower for SS. The average removal efficiencies of 97.5% for BOD and 94.5% for SS are very satisfactory.







MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

PLANT NO. 2

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	330	6.6	98.0	49.4	196	12	94.0	28.1	
FEB.	420	12	97.0	62.2	258	10	96.0	37.8	
MAR.	400	8.4	98.0	76.0	156	8	95.0	28.7	
APR.	*359	9	97.5	56.9	*226	10	95.5	35.1	
MAY	270	4.8	98.0	42.2	178	7	96.0	27.2	
JUNE	600	14	97.5	80.1	222	18	92.0	27.9	
JULY	280	4.2	98.5	34.4	288	9	97.0	34.8	
AUG.	225	5.2	97.5	31.2	132	5	96.0	18.0	
SEPT.	*359	9	97.5	52.2	*226	10	95.5	32.2	
OCT.	270	12	95.5	39.4	112	4	96.5	16.5	
NOV.	432	16	96.0	57.8	488	16	96.5	65.6	
DEC.	*359	9	97.5	51.8	*226	10	95.5	31.9	
TOTAL	-	-	-	634.7	-	-	-	391.7	
AVG.	359	9	97.5	52.9	226	10	95.5	32.6	

*Average values substituted. No sample.

COMMENTS

An average organic loading of 315 ppm BOD and 208 ppm suspended solids was received at the plant in 1965. The average effluent values of 9 ppm BOD and 10 ppm SS were within OWRC objective of 15 ppm. The organic loadings for this plant were 43% greater than design values for BOD and 10% lower for SS. The average removal efficiencies of 97.5% for BOD and 95.5% for SS are very satisfactory.

AERATION SECTION

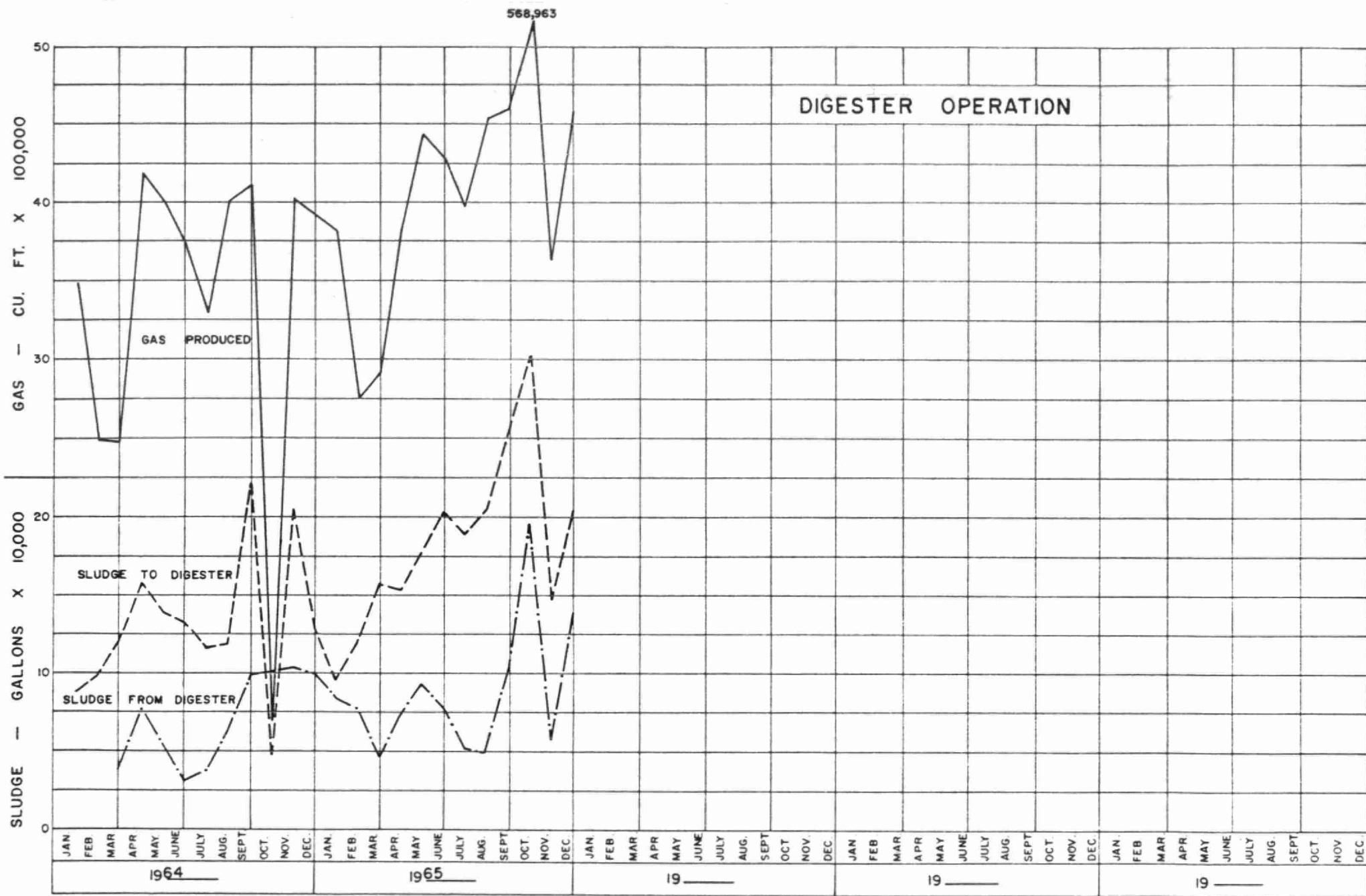
(PLANT NO. 1)

MONTH	PRIM. EFFL. B.O.D. PPM.	ML.SS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. BOD. REMOVED
JANUARY	118	-	-	5754
FEBRUARY	235	-	-	2870
MARCH	-	-	-	-
APRIL	160	-	-	1847
MAY	235	2390	45	2498
JUNE	135	1806	33	4943
JULY	-	-	-	-
AUGUST	-	-	-	-
SEPTEMBER	-	-	-	-
OCTOBER	-	-	-	-
NOVEMBER	210	-	-	2290
DECEMBER	210	-	-	2244
TOTAL	-	-	-	-
AVERAGE	186	2098	39	3207

AERATION SECTION

(PLANT NO. 2)

MONTH	PRIM. EFFL. B.O.D. PPM.	ML.SS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. BOD. REMOVED
JANUARY	200	1912	29	4757
FEBRUARY	280	1934	54	2384
MARCH	225	-	-	4410
APRIL	-	-	-	-
MAY	190	2011	29	4641
JUNE	300	2489	31	3428
JULY	225	-	-	4137
AUGUST	215	-	-	-
SEPTEMBER	-	-	-	-
OCTOBER	330	-	-	3504
NOVEMBER	238	1240	49	3327
DECEMBER	-	-	-	-
TOTAL	-	-	-	-
AVERAGE	245	1917	38	3824



DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu. Ft.
	1000'S CU. FT.	% SOLIDS	% VOL. MAT.	1000'S CU. FT.	% SOLIDS	% VOL. MAT.	
JAN.	15.49	-	-	13.62	-	-	382.16
FEB.	19.30	-	-	12.66	-	-	276.97
MAR.	25.20	-	-	7.69	-	-	292.25
APR.	24.57	-	-	11.86	-	-	383.02
MAY	28.81	-	-	14.90	-	-	445.08
JUNE	32.77	4.83	4.31	12.50	-	-	428.85
JULY	26.33	-	-	8.17	-	-	397.77
AUG.	29.69	-	-	8.01	-	-	455.06
SEPT.	41.09	-	-	16.02	-	-	463.93
OCT.	49.81	-	-	31.57	-	-	568.96
NOV.	23.81	-	-	9.46	-	-	364.68
DEC.	33.19	-	-	22.76	-	-	465.56
TOTAL	350.06	-	-	169.22	-	-	5504.29
AVG.	29.17	4.83	4.31	14.10	-	-	458.70

COMMENTS

A total of 350,060 cu. ft. of raw sludge was pumped to the digester in 1965 as opposed to 289,460 cu. ft. in 1964. This is an increase of 20% and is indicative of the relatively high organic loading on this plant. This sludge loading is approximately double that which would be received if only domestic sewage was received at the plant.

With the high sludge loading considerable quantities of methane are produced and utilized for the heating requirements throughout the plant.

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CONCLUSIONS

The combined plants operated efficiently during 1965 producing an effluent which met OWRC objectives. The plant staff have done an excellent job to date in renovating the older buildings and equipment associated with the old plant. However, much is yet to be done and it is hoped that in 1966 the aeration piping and diffusers in the old plant along with the two old blowers can be completely renovated.

